

OPERATING INSTRUCTIONS

for the

ALLEN

**MODEL E-290
PORTABLE SPOT WELDER**

ALLEN EQUIPMENT CORRECTLY OPERATED

MEANS MORE SATISFIED CUSTOMERS



ALLEN ELECTRIC and EQUIPMENT COMPANY • KALAMAZOO, MICHIGAN

**PRICE
50 CENTS**

OPERATING INSTRUCTIONS

FOR THE

ALLEN E-290

PORTABLE SPOT WELDER

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PRICE
50 CENTS

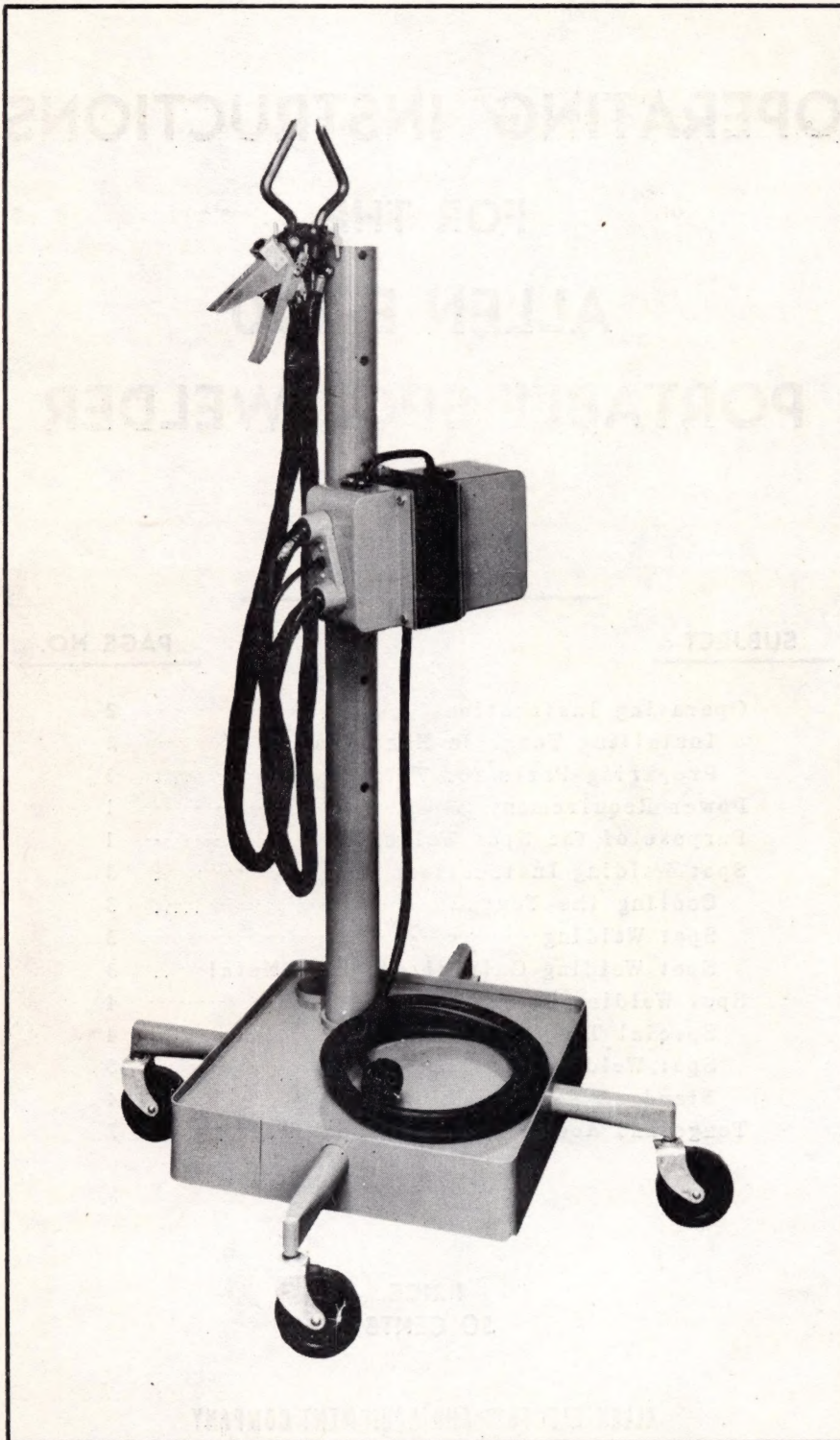
ALLEN ELECTRIC AND EQUIPMENT COMPANY

MANUFACTURERS OF TUNE-UP.

BATTERY, ELECTRICAL AND WELDING EQUIPMENT

2101-2117 NORTH PITCHER STREET

KALAMAZOO 13F, MICHIGAN, U. S. A.



THE MODEL E-290 PORTABLE SPOT WELDER

FIGURE NO. I

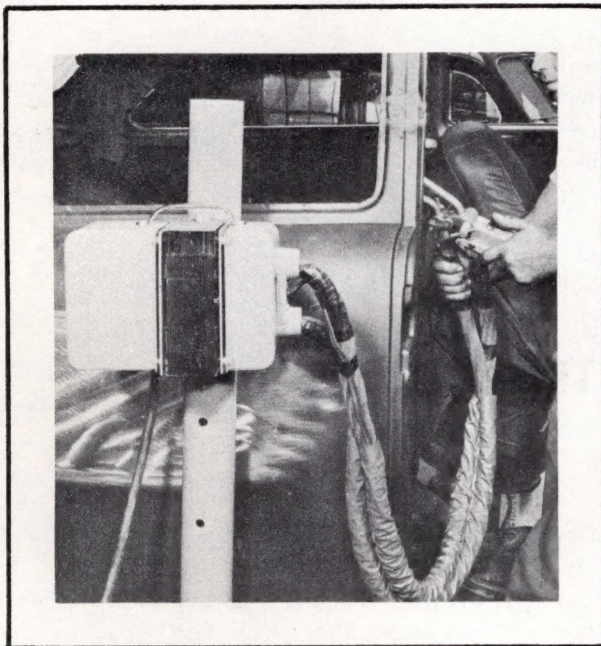
THE MODEL E-290 PORTABLE SPOT WELDER

PURPOSE OF THE SPOT WELDER

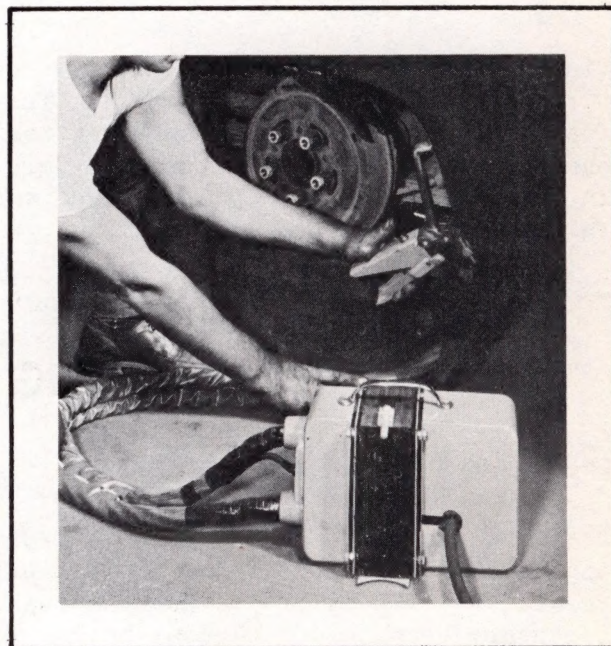
The Allen Model E-290 Portable Spot Welder is designed for universal application for spot welding iron, sheet steel and stainless steel up to a combined thickness of 1/8 inch. Lighter gauges of galvanized steel may also be spot welded.

The Allen Portable Spot Welder has all the advantages usually found only in large size welders. Conventional tog holders on flexible cables eliminate fatigue of lifting and holding the welding transformer during operation.

The Welder is removable from the stand to accommodate its use in any desired location, on the floor, inside vehicle bodies, underneath the vehicle or in any part of the repair shop. When mounted on the stand, the height can be adjusted up or down as required for installing metal tops on car bodies.



WELDER MOUNTED ON STAND
FIGURE NO. 2



WELDER REMOVED FROM STAND
FIGURE NO. 3

POWER REQUIREMENT

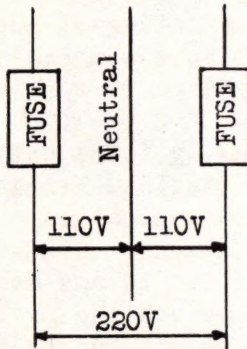
Connect the 3-wire plug on the power cord to a SINGLE PHASE LINE of the same cycles and voltage as shown on the Welder nameplate.

The ground wire of the 3-wire power cord is colored GREEN. Be sure the GREEN ground wire is grounded, so that the welder itself is grounded.

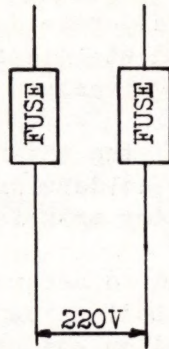
The following sketches illustrate various wiring systems, from which single phase 220 volt current can be obtained for operation of the Welder, and by comparing them with the wiring in the shop where the Welder is being installed, the proper wires to which the Welder should be connected can usually be determined.

POWER REQUIREMENT - (CONTINUED)

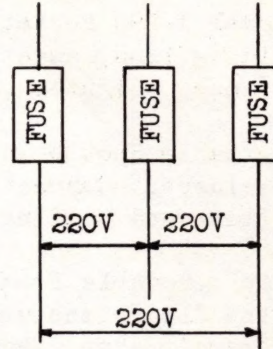
THREE WIRE
SINGLE PHASE
110-220 VOLTS



TWO WIRE
SINGLE PHASE
220 VOLTS



THREE WIRE
THREE PHASE
220 VOLTS



220 VOLTS SINGLE PHASE MAY BE OBTAINED FROM THESE WIRING SYSTEMS
FIGURE NO. 4

Single phase lines may be either two or three wire. Figure No. 4. If three wire, be sure it is 110-220 volt. The center wire is neutral and usually has no fuse. Three phase lines may be either 220 or 440 volts. Any two legs of a three phase line furnish single phase. Care must be exercised in being sure the Welder is connected to single phase and of the same voltage and cycles as shown on the Welder nameplate.

OPERATING INSTRUCTIONS

PREPARING PARTS FOR WELDING

The work can be temporarily held in place by means of clamps prior to spot welding. THE SHEET METAL TO BE SPOT WELDED MUST BE REASONABLY CLEAN OF GREASE OR PAINT. It is possible to burn through a greasy coating, but this introduces unnecessary burning of the Spot Welder Tongs, and causes them to wear faster.

INSTALL TONGS IN HAND CLAMP

Select the necessary Tongs to perform the desired operation. (Refer to typical spot welding illustrations and note that the numbers on the illustrations correspond to the numbers on the base of each Tong.)

Place the Tongs in the Hand Clamp Assembly, and adjust them so that the points are in line and make proper contact when they are closed. Tighten them securely with the thumb nuts.

Occasionally, it will be necessary to file the points of the pointed Tongs to keep them clean and pointed. THE POINTS SHOULD NEVER EXCEED 1/8 INCH IN DIAMETER. Ordinarily, one Tong has a large area on face (W-2 Tong). In this case, the small point on the other tong must be filed to 1/8 inch diameter.

SPOT WELDING INSTRUCTIONS

SPOT WELDING

Place the Hand Clamp in position so that one Tong is on one side, and the other is on the other side of the two pieces of metal to be welded. Close the handles firmly together. The pressure on the Tongs will bring the sheet metal together for good contact. Next, press the Switch Button in the Handle, holding it down until the metal to be welded has turned red hot in a small circle about 1/4 inch in diameter around the points of the Tongs.

When the weld is finished, release the Switch Button before releasing the pressure on the Tongs. Remember to be sure the Tongs are pressing the metal tightly together while the switch is closed long enough to make the weld. Then, release the pressure after the switch is open. Keep the Tongs reasonably clean to prevent burning and arcing.

If the current is not allowed to flow long enough, a good weld will not be obtained, because the heat will not be sufficient to properly fuse the metals. It is also possible to apply the heat for too long a period, in which case the metal becomes overheated, and often results in burning a hole or a crater. A good spot will be smooth, except for a slight indentation where the points of the Tongs were in contact with the metal. A little practice by the operator will result in his being able to make perfect spot welds.

COOLING THE TONGS

IF THE SPOT WELDER TONGS BECOME EXCESSIVELY HOT, DUE TO A LARGE NUMBER OF SPOTS BEING MADE, THEY CAN BE DIPPED IN WATER AND COOLED, being careful not to get water on the push button switch.

PROCEDURE FOR SPOT WELDING GALVANIZED SHEET METAL

Galvanized sheet metal is very difficult to successfully spot weld, because of its coating of zinc, which has to be removed before the steel underneath will properly fuse together to form a strong weld. The removal of the zinc takes place when an arc occurs between the metal being welded. Two perfectly flat sheets, parallel to each other, are very difficult to weld until they are upset (flanged), as shown in Figure Nos. 5, 6, and 7. By using the proper pressure on the hand clamps, which can be determined through practice, successful spots can be secured rapidly, and without difficulty.

DOUBLE LAP
(4 Layers to Weld)
NORMAL TONG PRESSURE

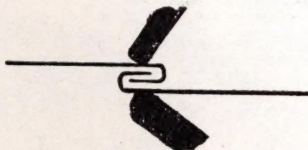


FIGURE NO. 5

1 1/2 LAP
(3 Layers to Weld)
FAIRLY LIGHT
TONG PRESSURE



FIGURE NO. 6

SINGLE FLANGE
(2 Layers to Weld)
(Lap Weld - Same)
VERY LIGHT
TONG PRESSURE

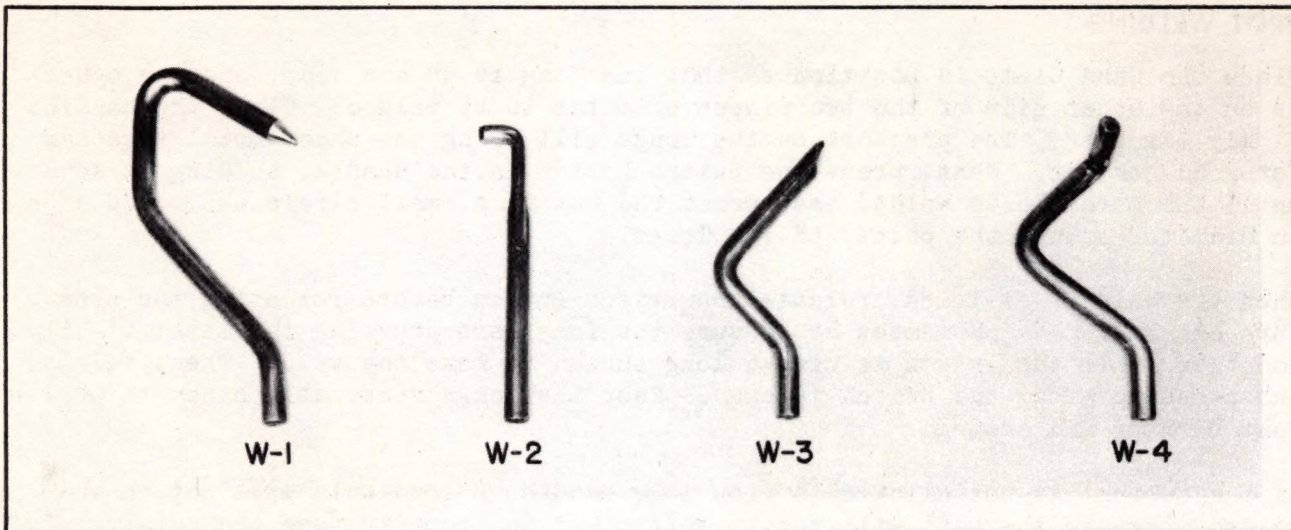


FIGURE NO. 7

(Spacing of flanges is exaggerated for purpose of illustrations only.)

(FOR BEST RESULTS, TONGS SHOULD BE WELL ROUNDED, TO SHARP, AT THE TIPS.)

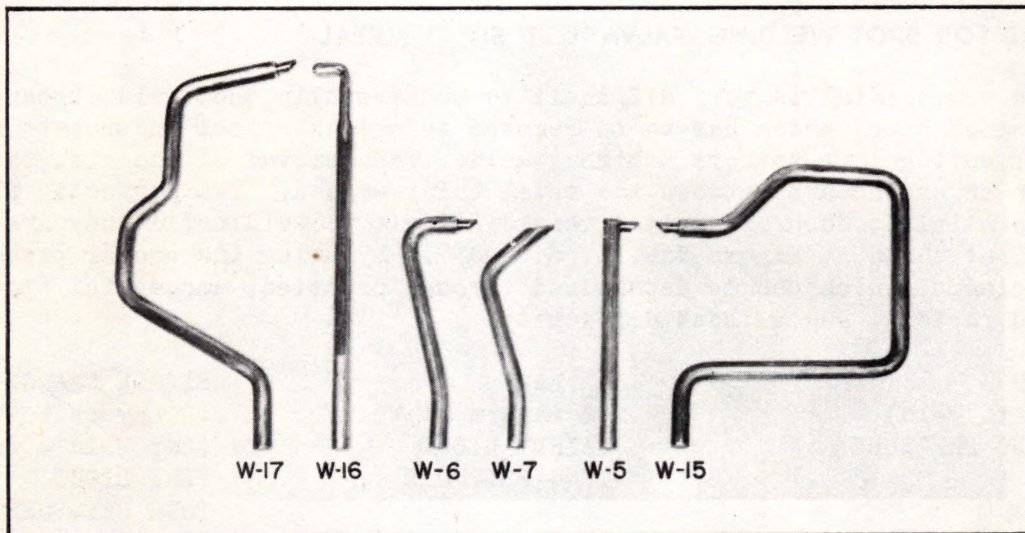
SPOT WELDING TONGS



STANDARD TONGS FURNISHED WITH SPOT WELDER
FIGURE NO. 8

STANDARD TONG COMBINATIONS

There are four Tongs furnished with the Model E-290 SPOT WELDER, as illustrated in Figure No. 8. These Tongs permit a combination of five pairs of tongs which will accommodate many of the frequently required applications. The W-1 Tong can be used with either the W-2, W-3, and W-4. The W-2 Tong has a flat face and can be used with the W-1, W-3 and W-17 Tongs. The W-3 Tong can be used with the W-1 and the W-4 Tong. The W-4 Tong can be used with the W-1 and the W-3 Tong.

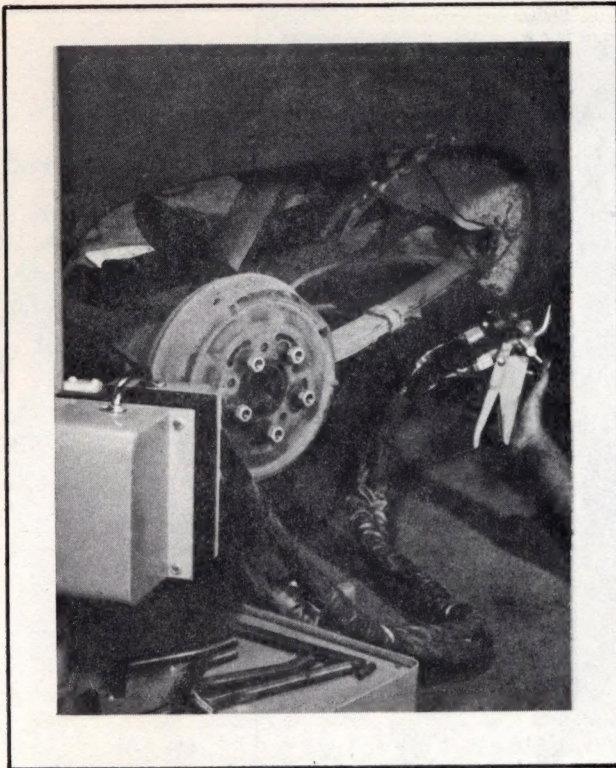


ACCESSORY TONGS AVAILABLE AT EXTRA COST
FIGURE NO. 9

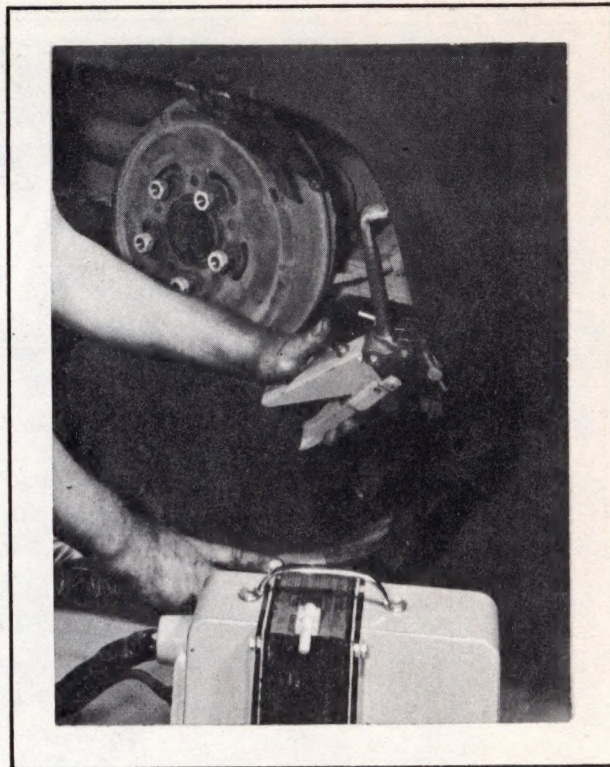
SPECIAL TONGS

In addition to the four standard Tongs furnished with the Spot Welder, special Tongs, W-5, W-6, W-7, W-15, W-16 and W-17, are also available at extra cost which are designed for specific applications. Also, the purchaser of the Welder can construct special Tongs to meet his requirements by ordering 5/8" unmachined copper rod required for the purpose. This rod can then be formed to any desired shape for special applications.

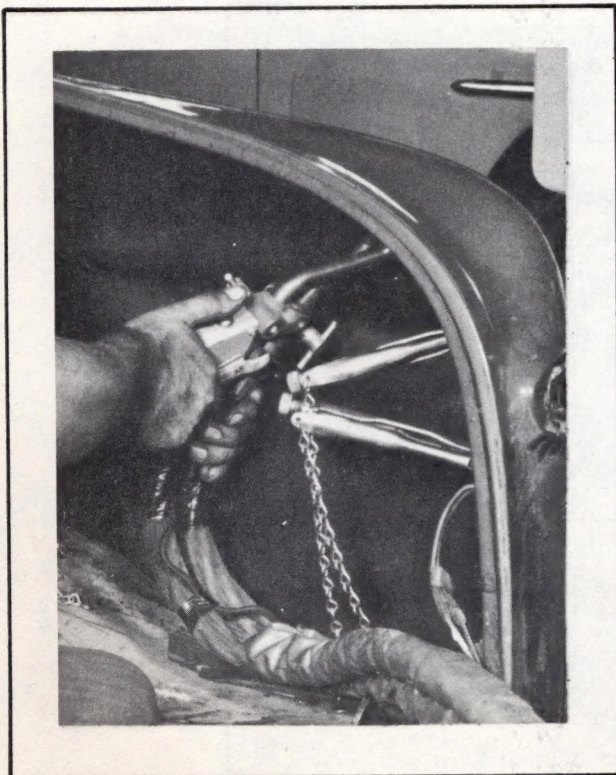
SPOT WELDER APPLICATIONS



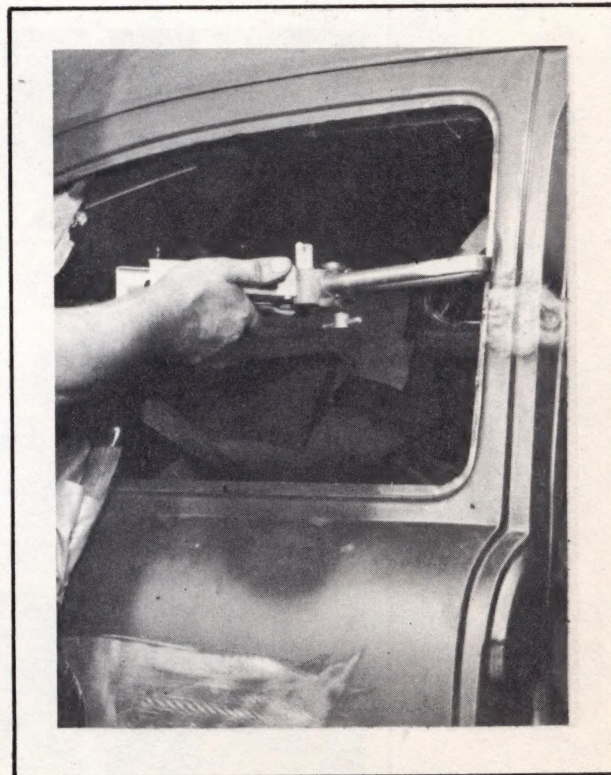
SPOT WELDING BOTTOM EDGE
OF FENDER PANEL
USING TONGS W-3 AND W-4
FIGURE NO. 10



SPOT WELDING FENDER PANEL
AROUND WHEEL
USING TONGS W-2 AND W-3
FIGURE NO. 11

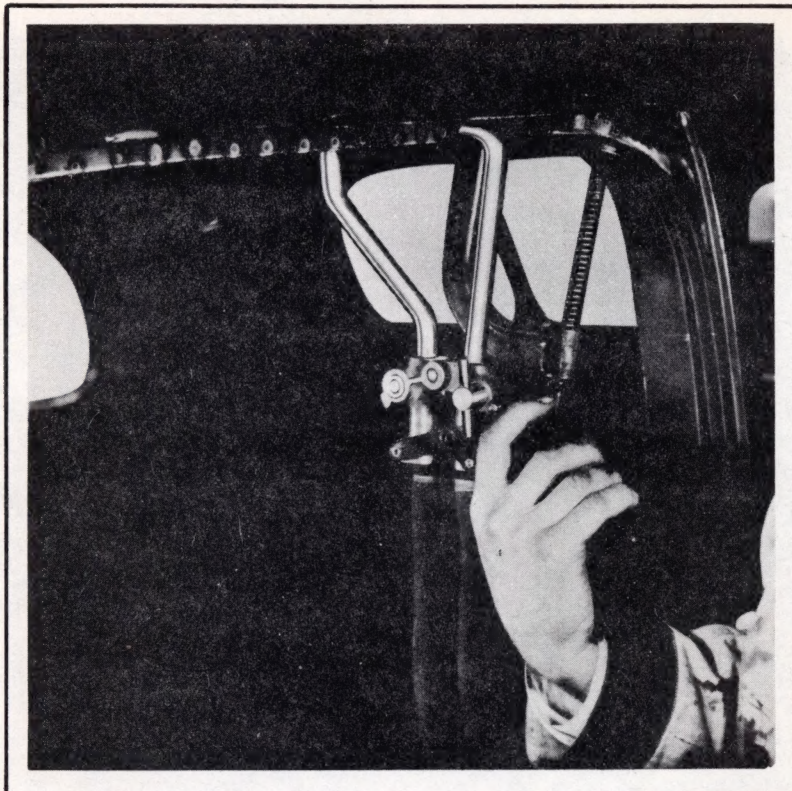


SPOT WELDING FENDER PANEL
TO BODY
USING TONGS W-3 AND W-4
FIGURE NO. 12

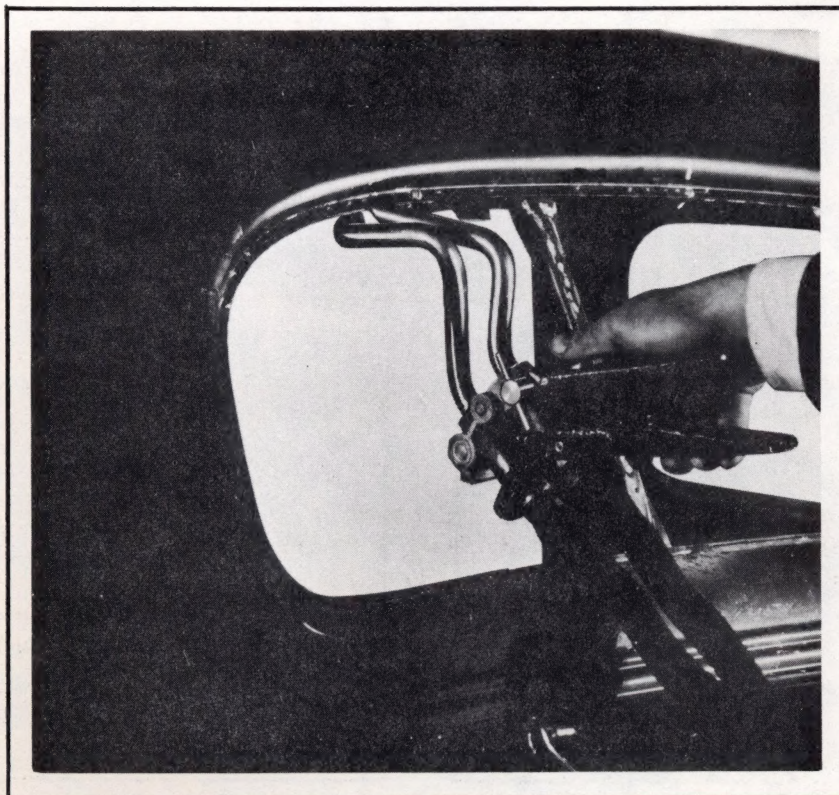


SPOT WELDING WINDOW FRAME
USING TONGS
W-2 AND W-3
FIGURE NO. 13

SPOT WELDER APPLICATIONS



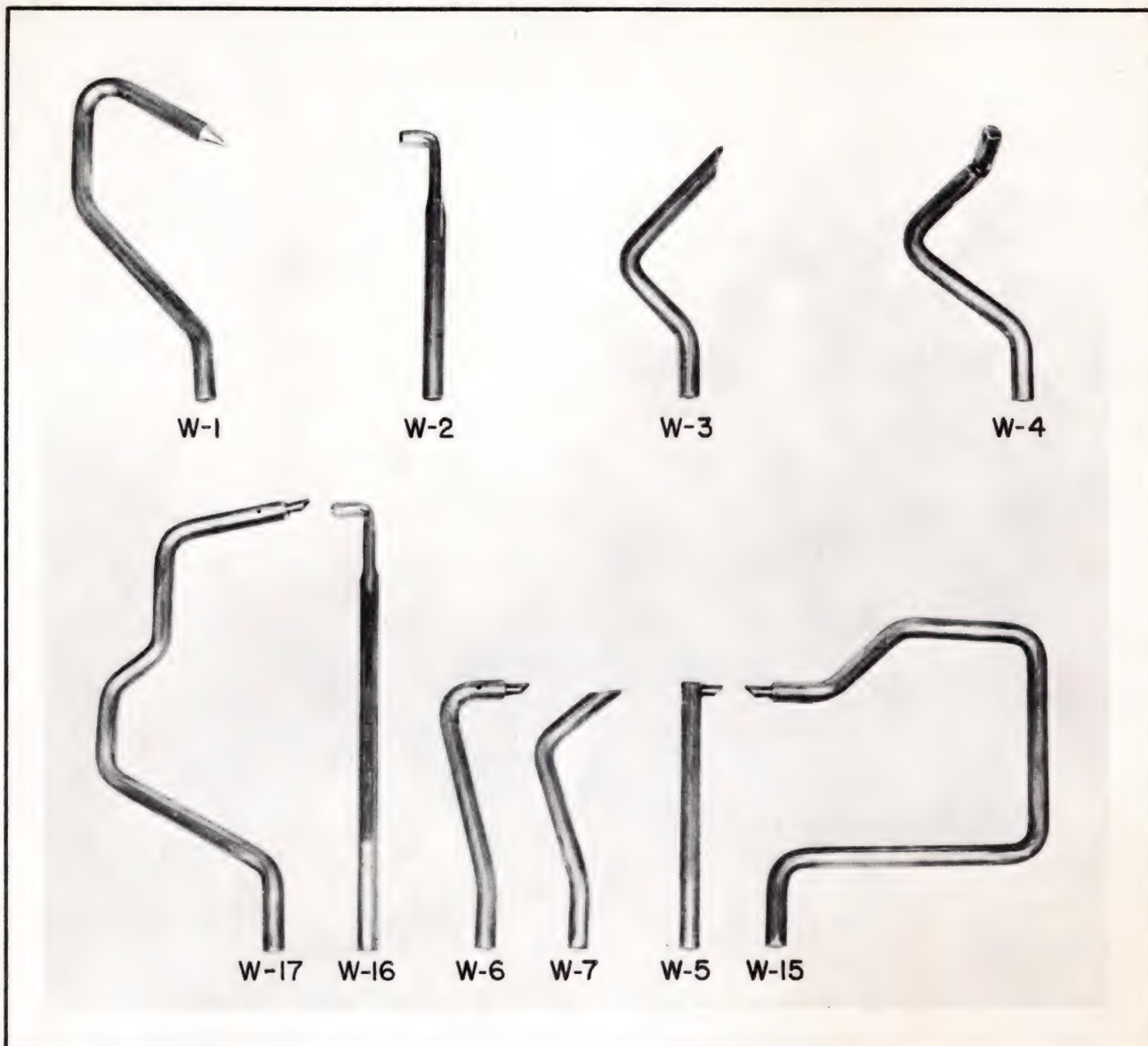
SPOT WELDING TOP TO ROOF RAIL OVER DOOR OPENING
USING TONGS W-1 AND W-2
FIGURE NO. 14



SPOT WELDING TOP TO REAR WINDOW FRAME
USING TONGS W-3 AND W-4
FIGURE NO. 15

TONGS AND ACCESSORIES FOR SPOT WELDER

(TONG ILLUSTRATIONS ARE SLIGHTLY LESS THAN ONE-FOURTH ACTUAL SIZE)



TONGS

Fisher Bodies require tongs W-1, W-2, W-3 W-4, W-7, W-15, W-16 and W-17.
Chrysler Corp., Packard, Graham and Hudson Bodies require tongs W-1, W-2, W-3 and W-4.

Ford Bodies require tongs W-1, W-2, W-3 and W-4.

Studebaker Bodies require tongs W-1, W-2, W-3, W-4, W-5, W-6 and W-7.

Willys Bodies require tongs W-1, W-2, W-3, W-4 and W-6.

Tongs W-5, W-6, W-15 and W-17 have "Elkaloy" Tips.

Allen will furnish quotations on special length or style tongs upon receipt of dimensional information, or will furnish unmachined rod in any length desired.

EXTENSION CABLE

A 25 foot extension 3-wire power cable, Part No. W-18, is available at extra cost for use with the Spot Welder. The cable is equipped with a 3-wire plug at one end and a 3-wire socket at the other end.

THE HEAVY CABLES FROM THE SPOT WELDER TO THE HAND CLAMP CANNOT BE EXTENDED AS THIS WOULD REDUCE THE WELDING ABILITY OF THE WELDER.

ALLEN ELECTRIC AND EQUIPMENT COMPANYE-290 ALLEN PORTABLE SPOT WELDERREPLACEMENT PARTS LIST

The E-290 comes complete with stand, casters, and 4 welder tongs: W-1, W-2, W-3, W-4.

<u>PART</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
Base	Complete Base less Column and Casters.	A-9580
Casters	Base Caster (4 Req'd)	1025
Column	Steel Column which Transformer Hangs on	A-9588
Lead	AC Lead 15 ft. Long #14 3 cond. R.C.	A-9599

PARTS FOR RELAY

Relay	Complete Relay 220 V.	A-9685
Clapper	Relay Top Lamination with Hinges	A-9687
Coil	220 V Relay Coil	5497-1
Contacts	Moving Contacts and Holder	A-9689
Contacts	Stationary Contacts and Holder	A-9688
Frame & Coil	Relay Frame, Coil and Core Assembly	A-9686
Spring	Relay Coil Spring	3507

PARTS FOR SPOT WELDER HANDLE & CABLE

Handle & Cable	Complete Spot Welder Handle & Cables	A-9572-1
Cable Only	Spot Welder Cable 66" Long (Max. Length)	A-9573-1
Clamp Blocks	Clamp Screw Blocks (2 Pr. Req'd)	5538
Grip	Steel Handle Grip	A-5528
Hand Piece	Cast Bronze Casting (2 Req'd)	5532-1
Handle	Clamp Screw Handle	A-5540
Handle	Complete Tong Holder Handle	Number to be Assigned
Handle	Steel Handle	A-5522
Insulation	Hinge Pin Insulation	5535
Insulation	Switch Insulation	5530
Hinge Pin	Large Rivet 1/4" x 1-5/8"	5536
Link	Bakelite Links (2 Req'd)	5537
Short Sleeve	Rubber Sleeve for Cable, 5" Long.	9579
Sleeve	Plastic Sleeve for Cables, 36" Long	9578
Spring	Handle Spring	1156
Switch	Push Switch	9760
Washer	Bakelite Washer (4 Req'd)	5534

ALLEN ELECTRIC AND EQUIPMENT COMPANY
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REPLACEMENT PARTS LIST FOR E-290 - (CONTINUED)

PARTS FOR TRANSFORMER ASSEMBLY

<u>PART</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
Welder Ass'y.	Complete Welder less Stand	E-291
Bonnet	Small Sheet Metal Cover	A-9564
Casting	Cable Support Casting	9568-2
Grill	Sheet Metal Grill	A-9555
Handle	Steel Handle	9587
Relay Support	Sheet Metal Grill and Support	A-9554
Strain Relief	For on-off Wire, Hole Size 25/64"	9548-3
Support	Transformer Foot and Hook	A-9576
Transformer	220 V Spot Welder Transformer	A-9550-1

PARTS USED WITH THE E-290 AT EXTRA COST

Extension	2 ft. Long with Socket and Clips (for Salesmen)	A-9774
Clip	#27 (3 Req'd)	1409
Sock	Rubber Insulator Black # 29	1042
Sock	Rubber Insulator Red # 29 (2 Req'd)	1190
Socket	3 Contact Socket	9753
Tips	Welder Tips used with Tongs W-5, W-6, W-15 & W-17	3308

SALES ITEMS

Tong	W-1 Gooseneck Tong
Tong	W-2 7/8" Offset Tong
Tong	W-3 Arched Tong
Tong	W-4 Reverse Offset Tong
Tong	W-5 1/2" Offset Tong
Tong	W-6 2" Offset Tong
Tong	W-7 Low Arch Tong
Tong	W-15 Offset Tong 8"
Tong	W-16 Straight Tong 13"
Tong	W-17 Curved Tong 13"
Extension	W-18 Extension Lead 25 ft. Long of #14 3 Cond. R. C.
Copper Rod	5/8" at \$1.25 per Ft. Used for Making Your Own Special Tongs

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